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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

JOHN T. PUGACZEWSKI et al.

Group Art Unit: 2142

Examiner: Melvin H. Pollack

Serial No.: 09/469,206

Filed: December 21, 1999

For: NETWORK MANAGEMENT SYSTEM AND GRAPHICAL USER INTERFACE

Attorney Docket No.: 1626 (USW 0529 PUS)

APPEAL BRIEF

Mail Stop Appeal Brief - Patents
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Sir:

This is a brief in support of an appeal from the final rejection of claims 1-10 in the final office action dated January 29, 2003.

I. REAL PARTY IN INTEREST

The real party in interest is Qwest Communications International Inc. US West, Inc. merged with Qwest Communications International Inc. The original assignment to US West, Inc. is recorded on Reel/Frame 010855/0876.

CERTIFICATE OF MAILING UNDER 37 C.F.R. § 1.8

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II. RELATED APPEALS AND INTERFERENCES

Applicants point out that in 09/470,201 filed December 21, 1999 and 09/469,199 filed December 21, 1999, which claim priority to the same provisional applications as this application, appeals are being pursued.

III. STATUS OF CLAIMS

Claims 1-10 are pending in this application. Claims 1-10 have been rejected and are the subject of this appeal.

IV. STATUS OF AMENDMENTS

No amendments have been filed after the final action dated January 29, 2003.

V. SUMMARY OF THE INVENTION

Applicants' invention relates to a network management system for configuring a network connection between first and second service access points, to user interfaces for network management systems, and to on-line network management applications. Page 1, lines 13-16. Existing network architectures, for a single network provider, include a plurality of subnetworks or subnets. Typically, each subnetwork is made up of network hardware in accordance with a specific vendor hardware platform used in the subnetwork. Because the provider has a plurality of subnetworks, the various subnetworks are interconnected with each other, connecting the network hardware components from various different hardware platforms to each other. When network hardware from various different hardware platforms is connected together, configuration is rather difficult. Each hardware platform typically has its own interface that is used to configure that type of hardware. Page 1, line 18 - page 3, line 2.

For example, a first element manager is used to interface with network hardware in a first hardware platform of one subnet, while a different element manager is used to interface with another subnet that uses a different hardware platform. In order to interconnect

the various subnets with each other, it is necessary to individually, tediously, configure each subnet to subnet interface on each side with the appropriate configuration tool. As such, when there is a desire to provide a connection between two service access points at spaced apart locations in the overall network, with the path between the access point passing through a number of different subnetworks, configuration can take considerable time, and be quite difficult. Page 2, lines 3-12.

With reference to the specification and drawings, as shown in Figures 1-31, the present invention provides a method that allows a user, from a user access point, to interface with a network management system and select a bandwidth that is, in turn, provisioned as the connection bandwidth between a switch and the user access point by throttling the network connection at the switch.

As best shown in Figure 1, UMS hardware is generally indicated at 10 with the UMS itself indicated at 12. A network cloud 14 illustrates the interconnection of network hardware 16, 18, 20, 22 from various vendors. That is, each network hardware block represents a set of network elements having a particular type, where the element types are different in the different hardware blocks. As such, as-is, each network hardware element 16, 18, 20, 22 is programmed by interfacing with an associated element manager 46, 48, 50, 52, respectively. In accordance with the present invention, UMS 12 is operative to interface with the various element managers 46, 48, 50, 52 by using the information manager and the configuration manager of the UMS, to program elements in the various groups of different network hardware 16, 18, 20, 22. Network hardware blocks 16, 18, 20, 22 may also be referred to as subnets. UMS 12 allows the provisioning of a network connection from an end user 24, 26, 28 to any of various interfaces 30, 32, 34, 36. Page 12, lines 13-27.

As best shown in Figure 2, the responsibility of the configuration manager is to take requests from the service management layer, communicate with the information

manager to determine whether the request can be met, and then communicate with the individual element managers to request connection. Functional architecture generally indicated at 60 includes the following layers: service session layer 62, customer network layer 64, carrier network layer 66, switch or element layer 68. At service session layer 62, various service access points 70, 72, 74 are available for selection. In an example, first and second service access points 72 and 74, respectively, are selected to provide a customer with a connection to an internet service provider (ISP). At customer network layer 64, a route over the network is made up of various links, crossing various subnets 76. For each subnet, various network hardware such as switches 80 provide the path across the subnet. That is, the different subnets may have different types of elements (from different hardware manufacturers). And at the element level, each switch is made up of cross connections between ports 82 of the switch. Page 14, lines 3-19.

As shown in Figures 29-31, and best illustrated in Figures 30-31, the invention comprehends throttling the network connection at the switch. Claim 1 recites a computer readable storage medium having instructions stored thereon. The instructions are executable by a computer to provide, to a user, a user interface to a network management system for configuring a network connection between a provider access point and a user access point over a network including a permanent virtual circuit between a switch and the user access point. The medium further comprises instructions for providing a user interface to the user at the user access point (block 702). The interface interfaces the user with the network management system and directs the user to select a connection bandwidth for the permanent virtual circuit between the switch and the user access point (block 706).

The medium further comprises instructions for receiving at the network management system, through the user interface, a message indicative of a selected bandwidth from the user (block 708). The medium further comprises instructions for remotely provisioning the switch with the network management system in response to receiving the

message to throttle the network connection at the switch. (Block 710). The connection bandwidth between the switch and the user access point is limited by the user selected bandwidth thereby allowing the user, from the user access point, to interface with the network management system and select a bandwidth that is, in turn, provisioned as the connection bandwidth between the switch and the user access point. Page 7, ll. 1-13, page 37, l. 7 - page 38, l. 2; page 40, l. 28 - page 41, l. 6.

Claim 2 recites that prior to executing the instructions for remotely provisioning, the connection bandwidth is limited by a previous bandwidth. The medium further comprises instructions for directing the user to select a time duration for the selected connection bandwidth (block 722). The medium further comprises instructions for receiving a message indicative of a selected duration (block 724). The medium further comprises instructions for, upon the expiration of the selected duration after remotely provisioning the switch to limit the connection bandwidth by the selected bandwidth, remotely provisioning the switch with the network management system to throttle the network connection at the switch. The connection bandwidth between the switch and the user access point is limited by the previous bandwidth. (Blocks 726 and 728.) Page 7, ll. 15-19; page 41, ll. 7-19.

Claim 3 recites that a graphical user interface is provided (block 702). Page 7, ll. 14-15; page 38, ll. 3-7.

Claim 4 recites authenticating the user prior to remotely provisioning the switch (block 704). Page 7, ll. 14-15; page 38, ll. 7-17.

Claim 5 recites that the network includes a plurality of subnets. Each subnet has a corresponding element type and includes at least one programmable element of that type. Each element type has a corresponding element manager. The medium further comprises instructions for determining a route made up of links over the network from the provider point

to the user point. A network-to-network link connects a pair of adjacent subnets having elements of different types and a network logical link provides a path across a subnet. The medium further comprises instructions for establishing a connection across each subnet on the route by sending a request to the corresponding element manager to program the at least one subnet element in accordance with the network logical link across that subnet. Further, there are instructions for establishing a network-to-network connection between adjacent subnets on the route in accordance with the network-to-network link between those adjacent subnets to provide the network connection between the provider point and the user point. Figures 1-5; page 2, l. 25 - page 3, l. 15.

Claim 6 recites that at least some of the instructions are in a browser executable format. Page 38, ll. 3-7.

Claim 7 recites a method for providing, to a user, a user interface to a network management system for configuring a network connection between a provider access point and a user access point over a network including a permanent virtual circuit between a switch and the user access point. The method further comprises establishing a graphical user interface to the user at the user access point that interfaces the user with the network management system (block 702). The method further comprises directing the user, through the user interface, to select a connection bandwidth for the permanent virtual circuit between the switch and the user access point (block 706). The method further comprises receiving at the network management system, through the user interface, a message indicative of a selected bandwidth from the user (block 708). The method further comprises remotely provisioning the switch with the network management system in response to receiving the message to throttle the network connection at the switch such that the connection bandwidth between the switch and the user access point is limited by the user selected bandwidth. This allows the user, from the user access point, to interface with the network management system and select a bandwidth that is, in turn,

provisioned as the connection bandwidth between the switch and the user access (block 710). Page 7, ll. 20-25; page 37, l. 7 - page 38, l. 2; page 40, l. 28 - page 41, l. 6.

Claim 8 recites that prior to remotely provisioning, the connection bandwidth is limited by a previous bandwidth. The method further comprises directing the user to select a time duration for the selected connection bandwidth (block 722). The method further comprises receiving a message indicative of a selected duration (block 724). The method further comprises upon the expiration of the selected duration after remotely provisioning the switch to limit the connection bandwidth by the selected bandwidth, remotely provisioning the switch with the network management system to throttle the network connection at the switch such that the connection bandwidth between the switch and the user access point is limited by the previous bandwidth. (Blocks 726 and 728.) Page 7, ll. 15-19, page 41, ll. 7-19.

Claim 9 recites authenticating the user prior to remotely provisioning the switch (block 704). Page 7, ll. 14-15; page 38, ll. 7-17.

Claim 10 recites that a network includes a plurality of subnets. Each subnet has a corresponding element type and includes at least one programmable element of that type. Each element type has a corresponding element manager. The method further comprises determining a route made up of links over the network from the provider point to the user point. A network-to-network link connects a pair of adjacent subnets having elements of different types and a network logical link provides a path across a subnet. The method further comprises establishing a connection across each subnet on the route by sending a request to the corresponding element manager to program at least one subnet in accordance with the network logical link across that subnet. A network-to-network connection between adjacent subnets on the route in accordance with the network-to-network link between those adjacent subnets provides the network connection between the provider point and the user access point. Figures 1-5; page 2, l. 25 - page 3, l. 15.

VI. ISSUES

1. Whether claims 1, 4 are anticipated under 35 U.S.C. § 102(e) by Jones et al. (U.S. Patent No. 6,307,836).

2. Whether claims 1, 2, 4 are unpatentable under 35 U.S.C. § 103(a) over Jones in view of Farnsworth et al. (U.S. Patent No. 6,377,554).

3. Whether claims 1, 3, 4, 6, 7, 9 are unpatentable under 35 U.S.C. § 103(a) over Jones in view of Ravi et al. (U.S. Patent No. 6,292,834).

4. Whether claims 1, 4, 5 are unpatentable under 35 U.S.C. § 103(a) over Jones in view of Ma et al. (U.S. Patent No. 5,953,338).

5. Whether claim 8 is unpatentable under 35 U.S.C. § 103(a) over Jones and Ravi further in view of Farnsworth.

6. Whether claim 10 is unpatentable under 35 U.S.C. § 103(a) over Jones and Ravi further in view of Ma.

VII. GROUPING OF CLAIMS

With regard to issue No. 1, claims 1, 4 stand or fall together.

With regard to issue No. 2, claims 1, 2, 4 stand or fall together.

With regard to issue No. 3, claims 1, 3, 4, 6, 7, 9 stand or fall together.

With regard to issue No. 4, claims 1, 4, 5 stand or fall together.

With regard to issue No. 5, claim 8 stands or falls alone.

With regard to issue No. 6, claim 10 stands or falls together.

VIII. ARGUMENT

1. Claims 1, 4 (Anticipation By Jones)

The Examiner has rejected claim 1 as anticipated by Jones. However, Jones fails to suggest remotely provisioning the switch with the network management system in response to receiving the message to throttle the network connection at the switch such that the

connection bandwidth between the switch and the user access point is limited by the user selected bandwidth in combination with the other recited limitations. Jones does describe high speed transparent access to multiple services. In Jones, the network interface device permits fanning out of (nB+D) upstream and (mB+D) downstream channels. This feature is shown in Figure 1. Jones connects the user signal through the local switch fabric to the transport network bandwidth using a handshaking technique as opposed to the claimed technique of throttling the network connection at the switch in response to receiving a message as recited by claim 1. The fact that Jones uses the traditional handshaking technique is evidenced by col. 4, l. 41, col. 6, l. 11, col. 11, l. 41, and claim 3, l. 9. Accordingly, Jones fails to suggest the specific claimed technique of remotely provisioning the switch with the network management system in response to receiving the message to throttle the network connection at the switch such that the connection bandwidth between the switch and the user access point is limited by the user selected bandwidth. Jones fails to anticipate claim 1.

The only parts of Jones that the Examiner has pointed out as suggesting the claimed throttling feature are col. 4, ll. 53-63 and col. 5, ll. 5-10. These parts of Jones fail to suggest the recited feature let alone combining such a feature with the other recited elements of claim 1. Column 4, lines 53-63 of Jones describes the fanning out of (nB+D) upstream and (mB+D) downstream channels. A statical multiplexor multiplexes available bit rate (ABR) and variable bit rate (VBR) data traffic from different sources. These features of Jones are shown in Figure 1. Column 5, lines 5-10 describe enabling the number of upstream and downstream channels to differ and enabling the number of upstream and downstream channels to vary from call to call and within a call. However, Jones fails to suggest the specific throttling technique recited by claim 1. Jones only describes connecting the user signal through the local switch fabric to the transport network bandwidth using a traditional handshaking technique as opposed to the claimed technique of throttling the network connection at the switch in response to receiving the message as recited by claim 1. For the reasons given above, claim 1 is believed to be patentable.

Claim 4 is a dependent claim and is also believed to be patentable.

2. **Claims 1, 2, 4 (Unpatentable Over Jones In View Of Farnsworth)**

Regarding claims 1, 4, Farnsworth fails to address the deficiencies of Jones discussed above. Claims 1, 4 are believed to be patentable.

Regarding claim 2, claim 2 is a dependent claim and is believed to be patentable.

3. **Claims 1, 3, 4, 6, 7, 9 (Unpatentable Over Jones In View Of Ravi)**

Regarding claims 1, 4, Ravi fails to address the deficiencies of Jones discussed above. Claims 1, 4 are believed to be patentable.

Regarding claims 3, 6, these claims are dependent claims and are believed to be patentable.

Regarding claim 7, claim 7 is an independent claim that recites similar subject matter as claim 1, and as such, is believed to be patentable for similar reasons. In particular, Jones fails to suggest remotely provisioning the switch with the network management system in response to receiving the message to throttle the network connection at the switch such that the connection bandwidth between the switch and the user access point is limited by the user selected bandwidth as recited by claim 7. Ravi fails to address this deficiency of Jones. Claim 7 is believed to be patentable.

Regarding claim 9, claim 9 is a dependent claim and is also believed to be patentable.

4. **Claims 1, 4, 5 (Unpatentable Over Jones In View Of Ma)**

Regarding claims 1, 4, Ma fails to address the deficiency of Jones. Claims 1, 4 are believed to be patentable.

Regarding claim 5, claim 5 is a dependent claim and is also believed to be patentable.

5. **Claim 8 (Unpatentable Over Jones And Ravi Further In View Of Farnsworth)**

Claim 8 is a dependent claim and is also believed to be patentable.

6. **Claims 10 (Unpatentable Over Jones And Ravi Further In View Of Ma)**

Claim 10 is a dependent claim and is also believed to be patentable.

IX. SUMMARY

In applying the primary reference, Jones, the Examiner has pointed out general teachings of fanning out of the channels to accommodate available bit rate (ABR), variable bit rate (VBR) and constant bit rate (CBR) services. However, the applied references fail to specifically describe or suggest the invention as recited in the claims.

For reasons discussed above it is respectfully submitted that claims 1-10 are patentable. The final rejection of claims 1-10 should be reversed.

The fee of $320.00 as applicable under the provisions of 37 C.F.R. § 1.17(c) is enclosed. Please charge any additional fee or credit any overpayment in connection with this filing to our Deposit Account No. 02-3978.

Respectfully submitted,

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Enclosure - Appendix

IX. APPENDIX - CLAIMS ON APPEAL

1. A computer readable storage medium having instructions stored thereon, the instructions being executable by a computer to provide, to a user, a user interface to a network management system for configuring a network connection between a provider access point and a user access point over a network including a permanent virtual circuit between a switch and the user access point, the medium further comprising:

instructions for providing a user interface to the user at the user access point that interfaces the user with the network management system and that directs the user to select a connection bandwidth for the permanent virtual circuit between the switch and the user access point;

instructions for receiving at the network management system, through the user interface, a message indicative of a selected bandwidth from the user; and

instructions for remotely provisioning the switch with the network management system in response to receiving the message to throttle the network connection at the switch such that the connection bandwidth between the switch and the user access point is limited by the user selected bandwidth thereby allowing the user, from the user access point, to interface with the network management system and select a bandwidth that is, in turn, provisioned as the connection bandwidth between the switch and the user access point.

2. The medium of claim 1 wherein prior to executing the instructions for remotely provisioning, the connection bandwidth is limited by a previous bandwidth, and wherein the medium further comprises:

instructions for directing the user to select a time duration for the selected connection bandwidth;

instructions for receiving a message indicative of a selected duration; and

instructions for, upon the expiration of the selected duration after remotely provisioning the switch to limit the connection bandwidth by the selected bandwidth, remotely

provisioning the switch with the network management system to throttle the network connection at the switch such that the connection bandwidth between the switch and the user access point is limited by the previous bandwidth.

3. The medium of claim 1 wherein the instructions for providing the user interface include instructions for providing a graphical user interface.

4. The medium of claim 1 further comprising:

instructions for authenticating the user prior to remotely provisioning the switch.

5. The medium of claim 1 wherein the network includes a plurality of subnets, each subnet having a corresponding element type and including at least one programmable element of that type, each element type having a corresponding element manager, the medium further comprising:

instructions for determining a route made up of links over the network from the provider point to the user point, wherein a network-to-network link connects a pair of adjacent subnets having elements of different types and a network logical link provides a path across a subnet; and

instructions for establishing a connection across each subnet on the route by sending a request to the corresponding element manager to program the at least one subnet element in accordance with the network logical link across that subnet, and for establishing a network-to-network connection between adjacent subnets on the route in accordance with the network-to-network link between those adjacent subnets to provide the network connection between the provider point and the user point.

6. The medium of claim 1 wherein at least some of the instructions are in a browser executable format.

7. A method for providing, to a user, a user interface to a network management system for configuring a network connection between a provider access point and a user access point over a network including a permanent virtual circuit between a switch and the user access point, the method further comprising:

establishing a graphical user interface to the user at the user access point that interfaces the user with the network management system;

directing the user, through the user interface, to select a connection bandwidth for the permanent virtual circuit between the switch and the user access point;

receiving at the network management system, through the user interface, a message indicative of a selected bandwidth from the user; and

remotely provisioning the switch with the network management system in response to receiving the message to throttle the network connection at the switch such that the connection bandwidth between the switch and the user access point is limited by the user selected bandwidth thereby allowing the user, from the user access point, to interface with the network management system and select a bandwidth that is, in turn, provisioned as the connection bandwidth between the switch and the user access point.

8. The method of claim 7 wherein prior to remotely provisioning, the connection bandwidth is limited by a previous bandwidth, and wherein the method further comprises:

directing the user to select a time duration for the selected connection bandwidth;

receiving a message indicative of a selected duration; and

upon the expiration of the selected duration after remotely provisioning the switch to limit the connection bandwidth by the selected bandwidth, remotely provisioning the switch with the network management system to throttle the network connection at the switch such that the connection bandwidth between the switch and the user access point is limited by the previous bandwidth.

9. The method of claim 7 further comprising:

authenticating the user prior to remotely provisioning the switch.

10. The method of claim 7 wherein the network includes a plurality of subnets, each subnet having a corresponding element type and including at least one programmable element of that type, each element type having a corresponding element manager, the method further comprising:

determining a route made up of links over the network from the provider point to the user point, wherein a network-to-network link connects a pair of adjacent subnets having elements of different types and a network logical link provides a path across a subnet; and

establishing a connection across each subnet on the route by sending a request to the corresponding element manager to program the at least one subnet element in accordance with the network logical link across that subnet, and for establishing a network-to-network connection between adjacent subnets on the route in accordance with the network-to-network link between those adjacent subnets to provide the network connection between the provider point and the user point.